

Amendments to the Claims

The following listing of the claims replaces all prior versions and listings of the claims in the application:

Listing of Claims

1.-13. (Cancelled)

14. (Currently amended) A catheter comprising:

an elongate body having a longitudinal axis;

a unitary electrode having at least one bore formed through the electrode, wherein the unitary electrode couples to and is disposed at a distal end portion of the elongate body;

a conductive wire extending through said elongate body and electrically coupled to said unitary electrode; and

an irrigation channel extending through said elongate body and fluidly coupled to a proximal portion of the at least one bore,

wherein said at least one bore includes at least one fluid outlet branch coupling to a lateral side of the unitary electrode and said at least one fluid outlet branch includes one of a thermally insulating interior casing and a layer of a thermally poorly conductive material disposed within said at least one fluid outlet branch and wherein the at least one fluid outlet branch is formed at an acute angle relative to the longitudinal axis.

15. (Previously presented) A catheter according to claim 14, wherein said at least one bore couples to a lateral exterior portion of the unitary electrode.

16. (Previously presented) A catheter according to claim 14, wherein said irrigation channel has a longitudinal axis and said at least one branch

comprises a series of outlet openings that guide a fluid supplied through said irrigation channel and said at least one bore.

17. (Previously presented) A catheter according to claim 16, wherein the series of outlet openings are configured at an angle relative to the longitudinal axis, and wherein said angle comprises an angle of between about 30 degrees and about 90 degrees.

18. (Previously presented) A catheter according to claim 16, wherein the series of outlet openings is provided with a thermally insulating unitary inner casing.

19. (Previously presented) The catheter according to claim 14, wherein the distal end portion comprises:

a core manufactured from a material having one of a low thermal conductivity and a low electrical conductivity; and

a casing surrounding at least a substantial portion of the core wherein said casing comprises a material having one of a relatively higher heat conductivity and a relatively higher electrical conductivity relative to the core.

20. (Previously presented) The catheter according to claim 19, wherein the core is fabricated from at least one of a plastic material, a ceramic material, and a glass material, and wherein the casing is fabricated of a metallic material.

21. (Previously presented) The catheter according to claim 19, wherein the temperature sensor comprises a thermocouple coupled to a portion of the casing.

22. (Previously presented) The catheter according to claim 14, wherein said at least one bore terminates at an interface between said elongate body and said unitary electrode.

23.-26. (Cancelled)

27. (Currently amended) A catheter comprising:

an elongate body having a longitudinal axis;

a unitary electrode having a longitudinal axis disposed at a first end of the elongate body and having at least one outlet opening formed therethrough at an acute angle relative to the longitudinal axis;

at least one electrically conductive wire extending through said elongate body, said at least one electrically conductive wire coupled to said unitary electrode;

an irrigation channel extending through said elongate body and fluidly coupled to the at least one outlet opening, said channel configured to deliver a fluid through said elongated body from a remote source of fluid and into said at least one passageway; and

one of a thermally insulative layer of a material and a layer of a thermally poorly conductive material disposed within the at least one outlet opening to insulate at least a portion of said at least one outlet opening.

28. (Previously presented) A catheter according to claim 27, wherein said irrigation channel has a longitudinal axis and the at least one outlet opening[[s]] is adapted to deliver said fluid to an outer surface of said elongated body in an outflow direction, and wherein said outflow direction comprises an angle relative to said longitudinal axis.

29. (Previously presented) A catheter according to claim 28, wherein said at least one outlet opening comprises a plurality of outlet openings.

30. (Cancelled)

31. (Previously presented) A catheter according to claim 27, further comprising a temperature sensor coupled to the electrode at a distance from an interface formed between said elongate body and said unitary electrode.

32.-37. (Cancelled)

38. (Currently amended) A method, comprising:

deploying a unitary electrode body, having a longitudinal axis, coupled to a distal portion of an elongate flexible shaft into contact with a volume of a target tissue, wherein said unitary electrode body includes a longitudinal fluid passageway formed from a proximal end portion through to a less proximal surface portion and the fluid passageway couples to at least one outlet opening formed at an acute angle relative to the longitudinal fluid passageway;

measuring a temperature of said unitary electrode body with a temperature sensor coupled to the electrode body and spaced from the fluid passageway; and

dispensing fluid from a remote vessel through an irrigation channel within the elongate body fluidly coupled to said fluid passageway,

wherein at least a portion of an interior surface of said at least one outlet opening comprises a layer of a thermally insulative material.

39. (Previously presented) A method according to claim 38, wherein the thermally insulative material comprises an electrically insulative material.

40. (Previously presented) A method according to claim 39, wherein one of the thermally insulative material and the electrically insulative material comprises preformed tubular member.

41. (Previously presented) A catheter according to claim 14, further comprising a temperature sensor thermally coupled to said unitary electrode.
42. (Previously presented) A catheter according to claim 41, wherein the temperature sensor comprises a least one of a thermocouple and a thermistor.
43. (Previously presented) A catheter according to claim 14, further comprising low thermally conductive material casing disposed between the at least one bore and at least one fluid outlet branch and the unitary electrode.
44. (Previously presented) A catheter according to claim 14, further comprising means for thermally insulating the interior of the at least one bore and the at least one fluid outlet branch from the unitary electrode.
45. (Previously presented) A catheter according to claim 41, wherein the unitary electrode is formed like one of a cap-shaped member and a cup-shaped member, each having a convex inner portion disposed adjacent the means for thermally insulating.
46. (Previously presented) A catheter according to claim 45, wherein the temperature sensor is coupled to the convex inner portion.
47. (Previously presented) A catheter according to claim 14, wherein the unitary electrode comprises a relatively thin metallic member coupled to the exterior of an inner portion formed of a relatively low thermally conductive material.

48. (Previously presented) A catheter according to claim 27, further comprising a temperature sensor directly thermally coupled to the unitary electrode and spaced from the at least one outlet opening and the material.